Claims

What is claimed is:

1. A method for determining an endpoint for etching a layer, comprising steps of:
estimating the etch endpoint; and, during etch,
directing radiant energy at two or more wavelengths onto the layer to be etched,
detecting the last intensity maximum reflected at a first wavelength prior to the estimated etch endpoint, and
detecting the intensity maximum reflected at a second wavelength first occurring after the last intensity maximum at the first wavelength.

2. The method of claim 1 wherein the first wavelength is longer than the second wavelength.

3. The method of claim 1 wherein at least two interference maxima occur at the first wavelength during the etch.

4. The method of claim 1 wherein the layer comprises a material that is at least partially transparent to both the first wavelength and the second wavelength.

5. The method of claim 1 wherein the layer comprises a polysilicon material.

6. The method of claim 1 wherein the etch endpoint is taken as being at the intensity maximum reflected at the second wavelength first occurring after the first intensity maximum at the first wavelength.

7. The method of claim 1 wherein the etch endpoint is taken as being at a point an interval later than the intensity maximum reflected at the second wavelength first occurring after the first intensity maximum at the first wavelength.

8. A method for determining an endpoint for etching a layer having an approximate initial thickness, comprising steps of, during etch,

directing radiant energy at three or more wavelengths onto the layer to be etched;

selecting first, second, and third wavelengths;

approximating an etch rate from the time interval between a first detected intensity minimum and an adjacent intensity maximum reflected at the third wavelength, and estimating an etch endpoint from the approximate initial thickness of the layer and the approximate etch rate;

detecting the last intensity maximum reflected at the first wavelength prior to the estimated etch endpoint; and

detecting the intensity maximum reflected at the second wavelength first occurring after the last intensity maximum at the first wavelength..

9. The method of claim 8 wherein the first wavelength is longer than the second wavelength.

10. The method of claim 8 wherein at least two interference maxima occur at the first wavelength during the etch.

11. The method of claim 8 wherein the layer comprises a material that is at least partially transparent to both the first wavelength and the second wavelength.

12. The method of claim 8 wherein the layer comprises a polysilicon material.

13. The method of claim 8 wherein the etch endpoint is taken as being at the intensity maximum reflected at the second wavelength first occurring after the first intensity maximum at the first wavelength.

14. The method of claim 8 wherein the etch endpoint is taken as being at a point an interval later than the intensity maximum reflected at the second wavelength first occurring after the first intensity maximum at the first wavelength.

15. The method of claim 8 wherein third wavelength is shorter than the first wavelength and longer than the second wavelength.